TWIN CAM CRANKCASE BEARING INSTALL/REMOVAL TOOL

GENERAL

Kit Number

14900014

Models

For 2003 and later Twin Cam Alpha models right and left main bearing installation and removal.

For 2003 and later Twin Cam Beta models left main bearing installation and removal.

Additional Parts Required

Separate purchase and use of tools may be required.

NOTES

The rider's safety depends upon the correct usage of this kit. Use the appropriate service manual procedures. If the procedure is not within your capabilities or you do not have the correct tools, have a Harley-Davidson dealer perform the installation. Improper use of this kit could result in death or serious injury.

This instruction sheet references service manual information. A service manual for your model motorcycle is required for this installation and is available from a Harley-Davidson Dealer.

Kit Contents

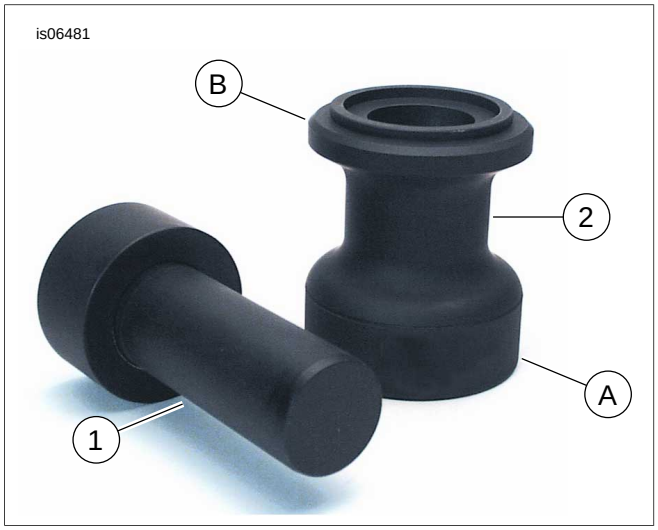


Figure 1. Twin Cam Crankcase Bearing Install/Removal Tool

Table 1. Service Parts

Item	Description (Quantity)	Part Number
1	Driver/Pilot	1671
2	Support tube	1670
"A" side of support tube		
"B" side of support tube		
Replacement parts for this kit are available directly from the vendor. If replacement parts are needed contact JIMS® at 805-482-6913 or www.jimsusa.com.		

INSTALLATION

1. Refer to the appropriate service manual and perform all steps under **TOP END OVERHAUL; DISASSEMBLY**
2. Refer to the appropriate service manual and perform all step under **BOTTOM END OVERHAUL; DISASSEMBLY.**

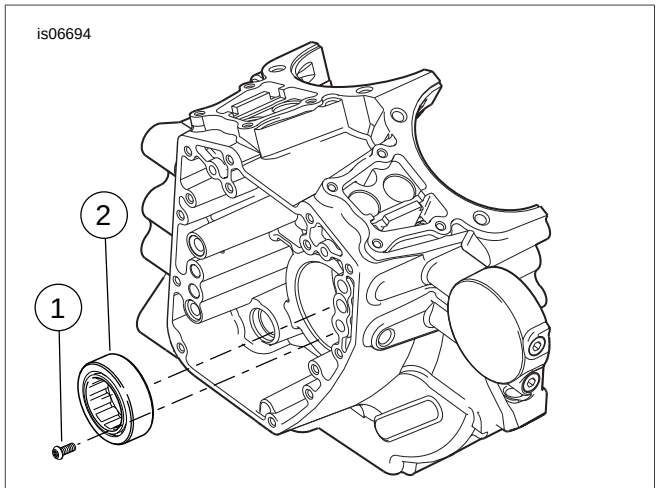
RIGHT CRANKCASE HALF

NOTE

Do not move or lift the crankcase by grasping the cylinder studs. The crankcase is too heavy to be carried in this manner and could be dropped.

Main Bearing Removal - 2011-Later, Alpha Twin Cam Only

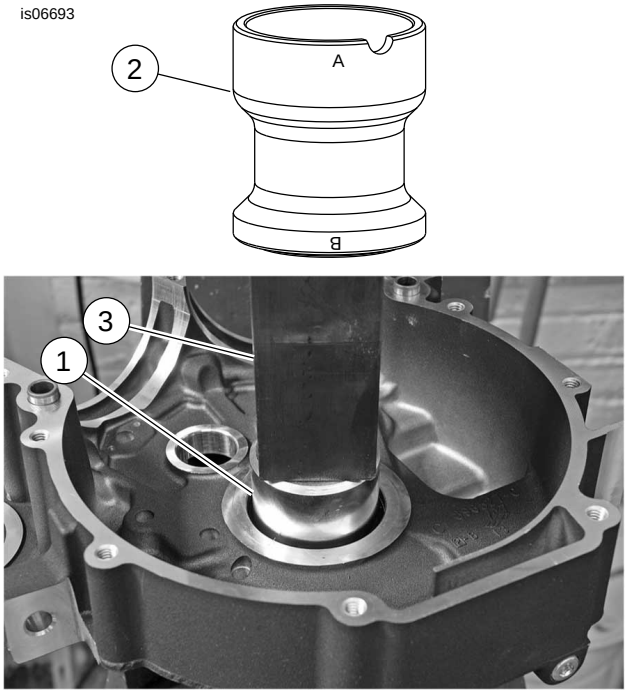
1. See Figure 2. Remove two main bearing retaining screws (5) from the cam compartment side.



1. **Retainer screws**
2. **Bearing**

Figure 2. Bearing Retainer Screws

2. See Figure 3. Obtain CRANKCASE BEARING pilot/driver and support tube.
3. Place support tube (2) on hydraulic press table with the "A" end up. Note that the sides of the support tube are stamped to verify proper orientation.
4. With the cam compartment side facing downward, position main bearing bore over support tube.
5. See Figure 4. Align notch in tool with cover screw boss as shown in Figure A.
6. Slide pilot/driver (1) through bearing into support tube.
7. Center pilot/driver under ram (3) of press. Apply pressure until bearing is free.
8. Remove crankcase, pilot/driver and bearing from support tube. Discard bearing.



1. Crankcase bearing pilot/driver
2. Support tube, "A" end up
3. Ram

Figure 3. Right Main Bearing Removal

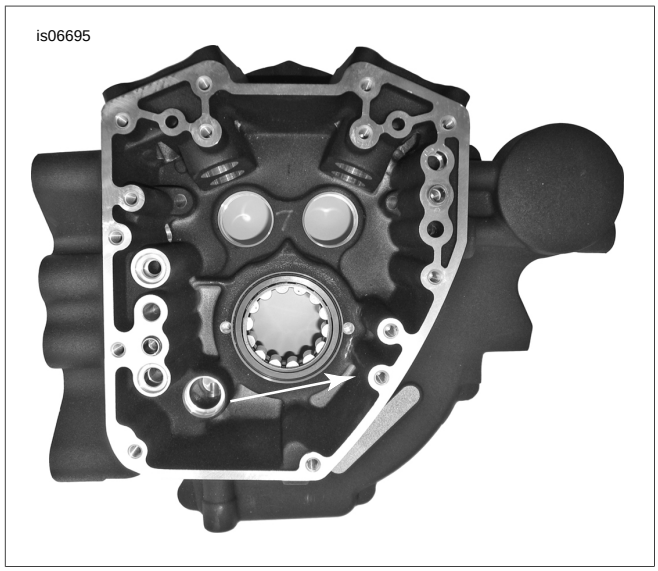


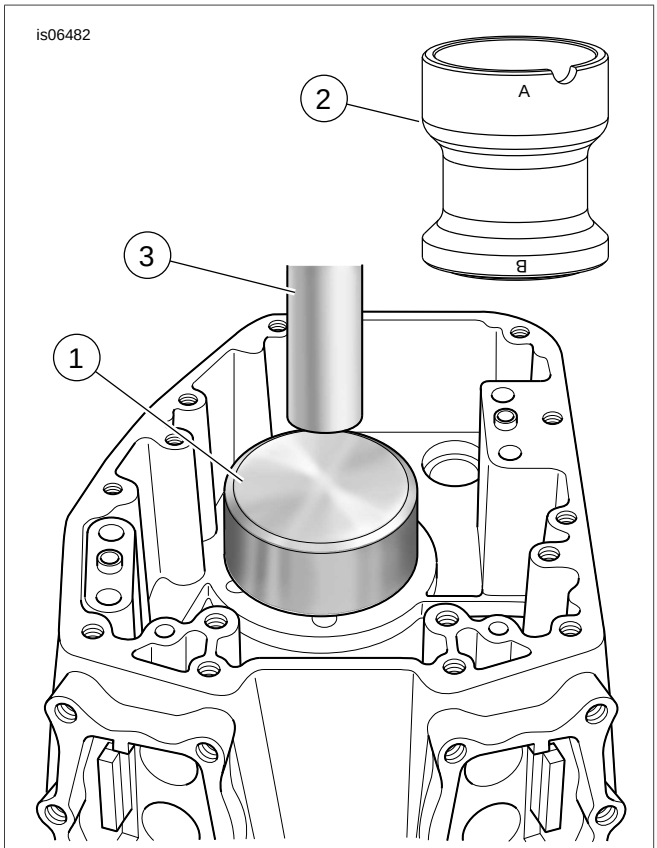
Figure 4. Tool Notch Aligned With Cover Screw Boss

Main Bearing Removal - 2003-2010, Alpha Twin Cam Only

NOTE

Do not move or lift the crankcase by grasping the cylinder studs. The crankcase is too heavy to be carried in this manner and could be dropped.

1. See Figure 5. Obtain crankcase bearing, pilot/driver and support tube.
2. Place support tube (2) on hydraulic press table with the "A" end up. Note that the sides of the support tube are labeled to be sure of the proper orientation.
3. With the outboard side of the right crankcase half facing upward, position main bearing bore over support tube. During removal it is important that the curved edges on the pilot/driver (1) match the curved edges of the crankcase.
4. Slide pilot/driver (1) through bearing into support tube.
5. Center pilot/driver under ram (3) of press. Apply pressure to pilot/driver until bearing is free.
6. Remove crankcase, pilot/driver and bearing from support tube. Discard bearing.



1. **Pilot/Driver**
2. **Ram**
3. **Support tube, "A" end up**

Figure 5. Right Main Bearing Removal

Main Bearing Installation

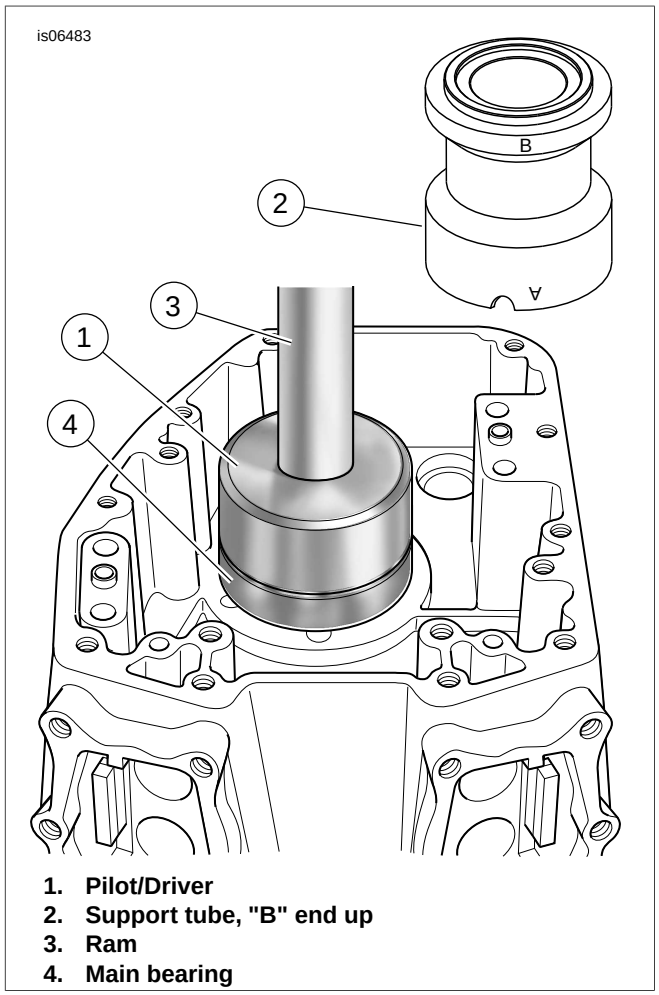
1. See Figure 6. Obtain crankcase bearing, pilot/driver and support tube.
2. Obtain **new** main bearing (4). Spread a thin film of clean engine oil on O.D. of new bearing.
3. Turn support tube (2) over so that the "B" end is up. The sides of the support tube are labeled "A" and "B" to make sure of the proper orientation.
4. With the out board side of the right crankcase half facing upward, position main bearing bore over support tube.
5. Lubricate leading edge (letter side) of **new** main bearing with clean engine oil. Start leading edge of bearing in bearing bore.
6. Slide pilot/driver (1) through bearing into support tube.
7. Center pilot/driver under ram (3) of press. Apply pressure to pilot/driver until resistance is felt and bearing is bottomed on the support tube.
8. Remove pilot/driver and crankcase half from support tube.
9. **For 2011 - Later Alpha Twin Cam Models only:**

NOTES

Verify that the bearing is flush or slightly below the surface of the crankcase. Never "push" the bearing into position using the retaining screws.

*If **new** retaining screws are not available, apply Loctite Threadlocker 243 (blue) to threads of screws before installation.*

10. See Figure 2. Install two new main bearing retaining screws (5) from the cam compartment side. Tighten screws to 40-70 in-lbs (4.5-7.9 Nm).



1. **Pilot/Driver**
2. **Support tube, "B" end up**
3. **Ram**
4. **Main bearing**

Figure 6. Right Main Bearing Installation

LEFT CRANKCASE HALF

Main Bearing Removal - 2003-Later, Alpha and Beta Twin Cam

NOTE

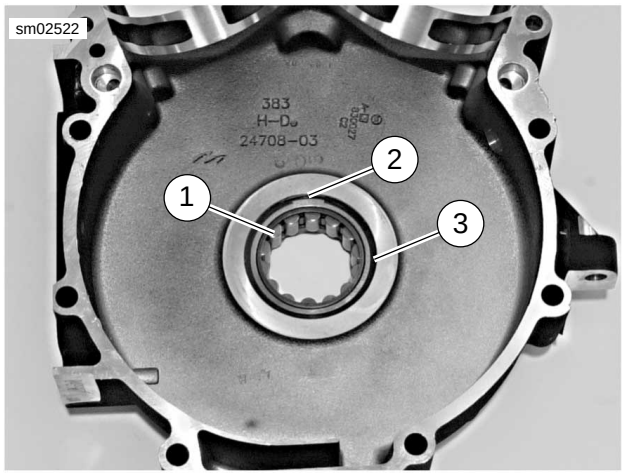
Never move or lift the crankcase by grasping the cylinder studs. The crankcase is too heavy to be carried in this manner and could be dropped.

⚠CAUTION

Do not rotate left crankcase half in engine stand such that flywheel sprocket shaft is facing up. The flywheel assembly can fall out, resulting in parts damage or moderate injury. (00552b)

1. While holding flywheel assembly so that it does not fall out of the left crankcase half, rotate bottom end assembly in engine stand so assembly is upright and flywheel shafts are horizontal.
2. Carefully slide flywheel assembly out of left crankcase and place it in a clean, safe place.

3. Unbolt left crankcase half from stand and move it to bench area. Remove thrust washer from outboard side of crankcase half by pulling it past oil seal. Set thrust washer aside for inspection or reuse.
4. Remove oil seal from crankcase bore. Discard oil seal.
5. See Figure 7. The left main bearing (1) is press-fit into the main bearing bore (2) in the left crankcase and secured with a retaining ring (3) on the inboard side.
6. See Figure 8. Using the tip of a flat blade screwdriver, carefully lift the edge of the retaining ring up out of its groove in the crankcase. Slide the screwdriver tip around the edge of the bearing, lifting the retaining ring up and out of the groove. Be careful not to damage the lip of the groove in the crankcase.



1. **Main bearing**
2. **Main bearing bore**
3. **Retaining ring**

Figure 7. Left Main Bearing Assembly

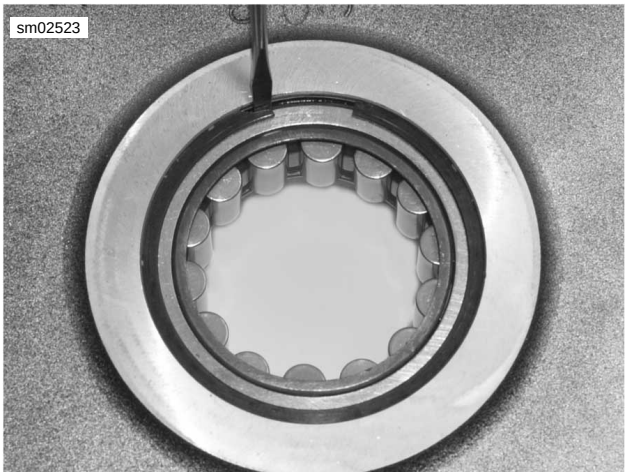
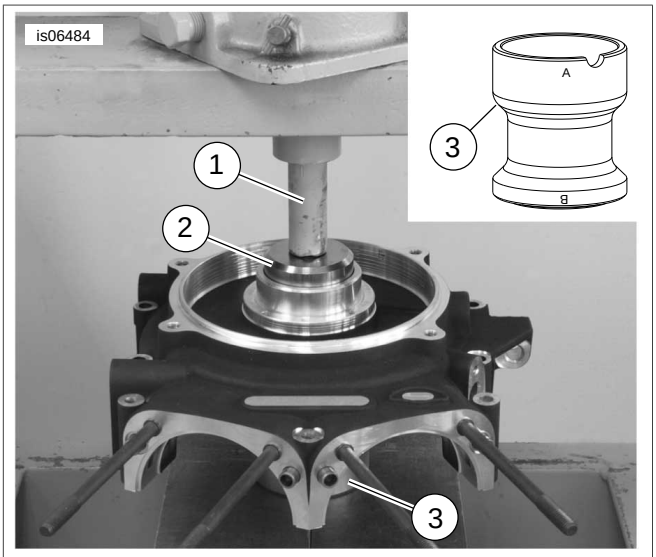


Figure 8. Removing Retaining Ring



1. **Ram**
2. **Pilot/Driver**
3. **Support tube, "A" end up**

Figure 9. Left Main Bearing Removal

NOTE

If the ram of the press is wider than the head of pilot/driver (2), a suitable press plug will be needed in order to remove the main bearing.

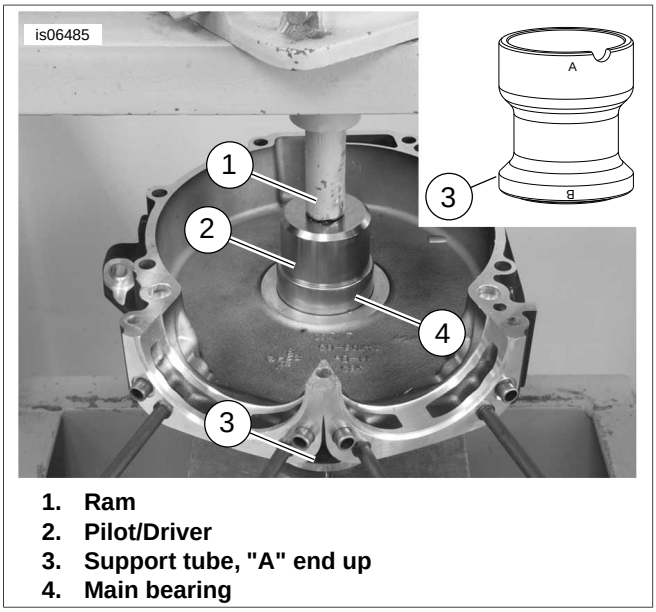
7. Obtain crankcase bearing pilot/driver and support tube.
8. See Figure 9. Place support tube (3) on hydraulic press table with "A" end up. Note that sides of support tube are labeled "A" and "B" to be sure of the proper orientation.
9. With the outboard side of the left crankcase half facing upward, position main bearing bore over support tube.
10. Slide pilot/driver (2) through main bearing into support tube (3).
11. If the ram of the press is wider than the head of pilot/driver (2), place a suitable press plug on top of pilot/driver.
12. Center pilot/driver under ram (1) of press. Apply pressure to pilot/driver until bearing is free.
13. Remove crankcase half, pilot/driver and bearing from support tube. Discard bearing.

Main Bearing Installation

NOTE

Never move or lift the crankcase by grasping the cylinder studs. The crankcase is too heavy to be carried in this manner and could be dropped.

1. Obtain crankcase bearing pilot/driver and support tube.



1. **Ram**
2. **Pilot/Driver**
3. **Support tube, "A" end up**
4. **Main bearing**

Figure 10. Left Main Bearing Installation

2. See Figure 10. Obtain **new** main bearing (4). Place a thin film of clean engine oil on outer diameter of bearing.
3. Place support tube (3) on hydraulic press table with the "A" end up.
4. With the inboard side of the left crankcase half facing upward, position main bearing bore over support tube.
5. Lubricate leading edge of **new** main bearing before placement. Start new main bearing in bearing bore, letter side down.
6. Slide pilot/driver (2) through bearing into support tube.
7. Center pilot/driver (2) under ram (1) of press. Apply pressure to pilot/driver until bearing is lightly bottomed in main bearing bore.
8. Remove crankcase half and pilot/driver from support tube.
9. Obtain **new retaining ring and install in bearing bore in inboard side of crankcase half. Work retaining ring into groove, being careful not to damage edges of groove. make sure retaining ring is fully seated in groove.**

NOTE

If retaining ring will not fit into groove in bearing bore, it is a sign that the bearing is not fully seated in the bore. Examine the bearing and bore. If necessary, remove bearing, clean bore and install bearing. Then install retaining ring.